might be made in a Summer : but my ſervants have been remiſs in what was ordered, I muſt crave your patience till next year.

An Account of Micrographia,*or the* Phyſiological Deſcriptions *of* Minute Bodies,*made by* Magnifying Glaſſes.

The Ingenious and knowing Author of this *Treatiſe*, Mr. *Robert Hook*, conſidering with himſelf, of what importance a faithful *Hiſtory of Nature* is to the eſtabliſhing of a ſolid Syſteme of *Natural Philoſophy*, and what advantage *Experimental* and *Mechanical* knowledge hath over the Philoſophy of *diſcourſe* and *diſputation*, and making it, upon that account, his conſtant buſineſs to bring into that vaſt Treaſury what portion he can, hath lately publiſhed a Specimen of his abilities in this kind of ſtudy, which certainly is very welcome to the Learned and Inquiſitive world,both for the *New diſcoveries* in *Nature*, and the *New Inventions* of *Art*.

As to the *former*,the Attentive Reader of this Book will find, that there being hardly any thing ſo ſmall, as by the help of *Microſcopes*, to eſcape our enquiry, a new viſible world is diſcovered by this means, and the Earth ſhews quite a new thing to us, ſo that in every *little particle* of its matter, we may now behold almoſt as great a variety of creatures, as we were able before to reckon up in the whole *Univerſe* it ſelf. Here our Author maketh it not improbable, but that, by theſe helps the ſubtilty of the compoſition of Bodies, the ſtructure of their parts, the various texture of their matter, the inſtruments and manner of their inward motions, and all the other appearances of things, may be more fully diſcovered; whence may emerge many admirable advantages towards the enlargement of the *Active* and *Mechanick* part of knowledge, becauſe we may perhaps be enabled to diſcern the ſecret workings of *Nature*, almoſt in the ſame manner, as we do thoſe that are the productions of *Art*, and are managed by *Wheels*, and *Engines*, and *Springs*, that were deviſed by Humane wit. To this end, he hath made a very curious *Survey* of all kinds of bodies, beginning with the *Point of a Needle*, and proceeding to the *Microſcopical* view of the *Edges* of *Raſors*, *Fine Lawn*, *Tabby*, *Watered Silks*, *Glaſs-canes*, *Glaſs-drops*, *Fiery Sparks*, *Fantaſtical Colours*, *Metalline Colours*, *the Figures of Sand*, *Gravel in Vrine*, *Diamonds in Flints*, *Frozen Figures*, *the Kettering Stone*, *Charcoal*, *Wood and other Bodies petrified*, *the Pores of Cork*, *and of other ſubſtances*, *Vegetables growing on blighted Leaves*, *Blew mould and Muſhroms*, *Sponges*, *and other Fibrous Bodies*, *Sea-weed*, *the Surfaces of ſome Leaves*, *the ſtinging points of a Nettle*, *Cowage*, *the Beard of a wild Oate*, *the ſeed of the Corn-violet*, *as alſo of Tyme*, *Poppy and Purſlane*. He continues to deſcribe *Hair*, *the ſcales of a Soal*, *the ſting of a Bee*, *Feathers* in general, and in particular thoſe of *Peacocks*; *the feet of Flies*; *& other Inſects*; *the Wings and Head of a Fly*: *the Teeth of a Snail*; *the Eggs of Silk-worms*; *the Blue Fly*: *a water Inſect*; *the Tufted Gnat*; *a White Moth*; *the Shepherds-ſpider*; *the Hunting Spider*, *the Ant*; *the wandring Mite*; *the Crab-like inſect*, *the Book-worm*, *the Flea*, *the Louſe*, *Mites*, *Vine-mites*. He concludeth with taking occaſion to diſcourſe of two or three very conſiderable ſubjects, viz. *The inflexion of the Rays of Lights in the Air*; *the Fixt ſtarrs*; *the Moon*.

In repreſenting theſe particulars to the Readers view, the Author hath not only given proof of his ſingular skil in delineating all ſorts of Bodies (he having drawn all the *Schemes* of theſe 60 *Microſcopical* objects with his own hand) & of his extraordinary care of having them ſo curiouſly engraven by the Maſters of that Art; but he hath alſo ſuggeſted in the ſeveral reflexions, made upon theſe Objects, ſuch conjecturs, as are likely to excite and quicken the Philoſophicall heads to very noble contemplations. Here are found inquiries concerning the *Propagation of Light* through differing mediums;

diums; concerning *Gravity*; concerning the *Roundneſs* of Fruits, ſtones, and divers artificial bodies; concerning *Springineſs* and *Tenacity*; concerning the *Original* of *Fountains*; concerning the *diſſolution of Bodies into Liquors*; concerning *Filtration*, and the aſcent of Juices in Vegetables, and the uſe of their *Pores*. Here an attempt is made of ſolving the ſtrange *Phænomena* of *Graſs-drops*; experiments are alleged to prove the *Expanſion* of *Glaſs* by heat, and the *Contraction* of *heated-Glaſs* upon cooling; *Des Cartes* his *Hypotheſis of colours* is examined: the *cauſe of Colours*, moſt likely to the Author, is explained: Reaſons are produced, that *Reflection* is not neceſſary to produce *colours*, nor a *double refraction*: ſome conſiderable *Hypotheſes* are *offered*, for the explication of Light by Motion; for the producing of all colors by Refraction; for reducing all ſorts of colors to two only, *Yellow* and *Blew*; for making the *Air*, a diſſolvent of all *Combuſtible Bodies*: and for the explicating of all the regular figures of *Salt*, where he alleges many notable inſtances of the *Mathematicks* of *Nature*, as having even in thoſe things which we account vile, rude and coorſe, ſhewed abundance of curioſity and excellent *Geometry* and *Mechaniſm*. And here he opens a large field for inquiries, and propoſeth Models for proſecuting them; 1. By making a full collection of all the differing kinds of *Geometricall* figur'd bodies; 2. By getting with them an exact Hiſtory of their places where they are generated or found: 3. By making ſtore of Tryals in Diſſolutions and Coagulations of ſeverall Cryſtallizing Salts: 4. By making trials on metalls, Minerals and ſtones, by diſſolving them in ſeverall *Menſtruums*, and Cryſtallizing them, to ſee what Figures will ariſe from thoſe ſeveral compoſitums: 5. By compounding & coagulating ſeveral Salts together into the ſame maſs, to obſerve the Figure of that product: 6. By inquiring the cloſenes or rarity of the texture of thoſe bodies, by examining their gravity, and their refraction, &c. 7. By examining what operations the fire hath upon ſeveral kinds of Salts, what changes it cauſes in their figures, Textures, or

Vertues

Vertues. 8. By examining their manner of diſſolution, or acting upon thoſe bodies diſſoluble in them;and the Texture of thoſe bodies before and after the proceſs. 9. By conſidering, by what and how many means, ſuch and ſuch figures, actions and effects could be produced, and which of them might be the moſt likely, &c.

He goes on to offer his thoughts about the Pores of bodies, and a *kind* of *Valves* in wood; about ſpontaneous generation ariſing from the Putrefaction of bodies; about the nature of the Vegetation of mold, muſhromes, moſs, ſpunges; to the laſt of which he ſcarce finds any Body like it in texture. He adds, from the naturall contrivance, that is found in the leaf of a Nettle, how the ſtinging pain is created, and thence takes occaſion to diſcourſe of the poyſoning of Darts. He ſubjoyns a curious deſcription of the ſhape, *Mechaniſm* and uſe of the *ſting* of a *Bee*; and ſhews the admirable Providence of Nature in the contrivance and fabrick of *Feathers* for Flying. He delivers thoſe particulars about the Figure, parts and uſe of the head, feet, and wings of a Fly, that are not common. He obſerves the various wayes of the generations of Inſects, and diſcourſes handſomely of the means, by which they ſeem to act ſo prudently. He taketh notice of the *Mechanical* reaſon of the *Spider's* Fabrick, and maketh pretty Obſervations on the hunting Spider, and other Spiders and their Webs. And what he notes of a Flea, Louſe, Mites, and Vinegar-worms, cannot but exceedingly pleaſe the curious Reader.

Having diſpatched theſe Matters, the Author offers his Thoughts for the explicating of many *Phænomena* of the Air, from the *Inflexion*, or from a *Multiplicate Refraction* of the rays of Light within the Body of the *Atmoſphere*, and not from a *Refraction* cauſed by any terminating *ſuperficies* of the Air above, nor from any ſuch exactly defin'd *ſuperficies* within the body of the *Atmoſphere*: which concluſion he grounds upon this, that a *medium*, whoſe parts are unequally *denſe*, and mov'd by various motions and tranſpoſitions as to one another, will produce all theſe viſible

viſible effects upon the rays of Light, without any other *coefficient* cauſe: and then, that there is in the Air or *Atmoſphere*, *ſuch* a variety in the conſtituent parts of it, both as to their *denſity* and *rarity*, and as to their divers mutations and poſitions one to another.

He concludeth with two *Celeſtial Obſervations*; whereof the *one* imports, what multitudes of Stars are diſcoverable by the *Teleſcope*, and the variety of their magnitudes: intimating withall, that the longer the Glaſſes are, and the bigger apertures they will indure, the more fit they are for theſe diſcoveries: the *other* affords a deſcription of a *Vale* in the *Moon*, compared with that of *Hevelius* and *Ricciolo*; where the Reader will find ſeveral curious and pleaſant Annotations, about the Pits of the *Moon*, and the Hills and Coverings of the ſame; as alſo about the variations in the *Moon*, and its *gravitating* principle, together with the uſe, that may be made of this Inſtance of a gravity in the *Moon*.

As to the *Inventions of Art*, deſcribed in this Book, the curious Reader will there find theſe following:

1. A *Baroſcope*, or an Inſtrument to ſhew all the Minute Variations in the *Preſſure of the Air*; by which he affirms, that he finds, that before and during the time of rainy weather, the Preſſure of the Air is leſs; and in dry weather, but eſpecially when an *Eaſterly* Wind (which having paſt over vaſt Tracts of Land, is heavy with earthy particles) blows, it is much more, though theſe changes be varied according to very odd Laws.

2. A *Hygroſcope*, or an Inſtrument, whereby the *Watery ſteams*, volatile in the Air, are diſcerned, which the Noſe it ſelf is not able to find. Which is by him fully deſcribed in the Obſervation touching the *Beard of a wild Oate*, by the means whereof this Inſtrument is contrived.

3. An Inſtrument for *graduating Thermometers*, to make them *Standards* of *Heat* and *Cold*.

4. A *New Engin* for *Grinding Optick Glaſſes*, by means of which he hopes, that any Spherical Glaſſes, of what length ſoever,

ſoever, may be ſpeedily made: which ſeems to him moſt eaſie, becauſe, if it ſucceeds, with one and the ſame Tool may be ground an *Object Glaſs* of any length or breadth requiſite, and that with very little or no trouble in fitting the *Engin*, and without much skill in the *Grinder*. He thinks it very exact, becauſe to the very laſt ſtroke the Glaſs does regulate and rectifie the *Tool* to its exact Figure; and the longer or more the *Tool* and *Glaſs* are wrought together, the more exact will both of them be of the deſired Figure. He affirms further, that the motions of the Glaſs and Tool do ſo croſs each other, that there is not one point of eithers ſurface, but hath thouſands of croſs motions thwarting it, ſo that there can be no kind of *Rings* or *Gutters* made, either in the *Tool* or *Glaſs*.

5. A *New Inſtrument*, by which the *Refraction* of all kinds of Liquors may be exactly meaſured, thereby to give the Curious an opportunity of making Trials of that kind, to eſtabliſh the *Laws* of *Refraction*, to wit, whether the *Sines of the Angles of Refraction are reſpectively proportionable to the Sines of the Angles of Incidence*: This Inſtrument being very proper to examine very accurately, and with little trouble, and in ſmall quantities, the *Refraction* of any Liquor, not onely for *one* inclination, but for *all*, whereby he is enabled to make accurate *Tables*. By the ſame alſo he affirms to have found it true, that what *proportion* the *Sine* of the Angle of the one *inclination* has to the *Sine* of its Angle of *Refraction*, correſpondent to it, the ſame proportion have all the other *Sines* of Inclination to their reſpective *Sines* of *Refractions*.

Laſtly, this Author deſpairs not that there may be found many Mechanical Inventions, to improve our Senſes of *Hearing*, *Smelling*, *Taſting*, *Touching*, as well as we have improved that of *Seeing* by *Optick Glaſſes*.

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